Bernardia fonsecae (Euphorbiaceae), a New Species from Guerrero, Mexico

Angélica Cervantes M.
Departamento de Botánica, Instituto de Biología, UNAM, Apartado Postal 70-233, Del. Coyoacán, 04510, México, D.F.

Jaime Jiménez Ramírez
Facultad de Ciencias, UNAM, Apartado Postal 70-399, Del. Coyoacán, 04510, México, D.F.

ABSTRACT. *Bernardia fonsecae*, endemic to Guerrero, Mexico, is described and illustrated, and habitat data are provided. *Bernardia fonsecae* is morphologically similar to *B. mollis* Lundell. They have in common long petioles, similar shape and size of the staminate bract, and a lobulate intrastaminal disc. *Bernardia fonsecae* differs from *B. mollis* in its leaf base and leaf shape, vestiture of the adaxial surface of the leaf, vestiture of the abaxial veins, diameter of the cicatricoso-crateriform glands, position of the staminate inflorescence, and number of stamens, among other characteristics.

Key words: *Bernardia*, Euphorbiaceae, Mexico.

Pax and Hoffmann (1914) wrote the most recent revision for *Bernardia*, a wholly Neotropical genus of Euphorbiaceae, recognizing only four species in Mexico. As the number of collections for the genus in Mexico has increased, new species have been described, and the contributions of McVaugh (1961, 1995) and Lundell (1940, 1945, 1976, 1985) are of special interest. With ca. 25 species of 50 recorded for the genus (Webster, 1994), Mexico has been considered, together with Brazil, as a center of diversity for the genus.

Bernardia is divided into seven sections according to Pax and Hoffmann (1914), three of which occur in Mexico: sect. *Tyria* (Klotzsch) Müller Argoviensis, sect. *Alevia* (Baillon) Müller Argoviensis, and sect. *Traganthus* (Klotzsch) Müller Argoviensis. Sections *Tyria* and *Alevia* consist of trees and shrubs with fasciculate or divided hairs, while the monotypic section *Traganthus* has simple hairs and includes the only herbaceous species of the genus. Section *Tyria* has lacinulate-lacerate style branches, and section *Alevia* has non-laciniate style branches. *Tyria*, with ca. 21 species, is mainly Mexican with two representatives in the West Indies. Here we describe a new species of section *Tyria* from Mexico.

Bernardia fonsecae A. Cervantes & J. Jiménez Ramírez, sp. nov. TYPE: Mexico. Guerrero: Mpio. Leonardo Bravo, Puerto Soleares, 7 km después de Carrizal hacia Atoyac, 17°35′15″N, 99°50′W, 2500 m, montane rain forest, 5 Nov. 1998, *R. M. Fonseca 2538* (holotype, MEXU; isotypes, FCME, MO). Figure 1.

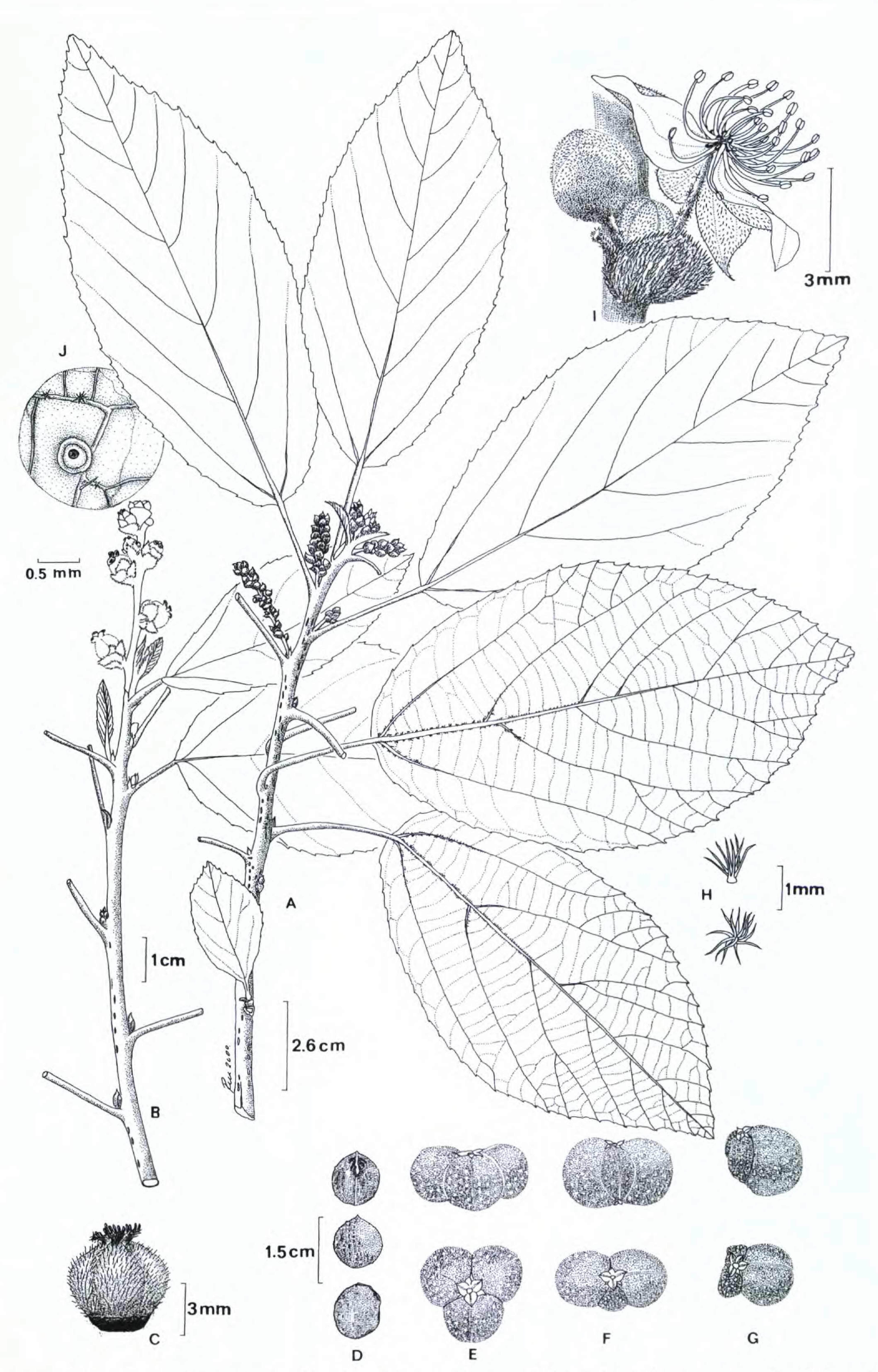
Arbor 6.0–18.0 m alta, dioica. Folia chartacea leviter scabra, longe petiolata; costa abaxialiter trichomatibus stellatis radiis longissimis praeditis vestita. Inflorescentia mascula ex racemo axillari terminelive constans, bracteis 4- ad 7-floris. Inflorescentia feminea ex spica terminali constans, bracteis unifloris. Flos masculus staminibus (22 ad) 26 ad 44. Flos femineus stylo lacerato piloso rufo vel rubiginoso. Capsula ca. 24 mm diametro, pericarpo minute aculeato, confertim stellato-hirto; seminibus globosis leviter carinatis.

Trees 6.0–18.0 m tall; dioecious. Branchlets with conspicuous elongate lenticels (1)2–4 mm long. Leaf blade 6.0–16.0(–22.0) cm long, 3.3–9.5(–12.0) cm wide, broadly elliptic to elliptic, elliptic-obovate or rarely lanceolate; margin serrate with 3 or 4 teeth per cm, teeth glandular; base attenuate, rounded or sometimes cordate or subtruncate; apex abruptly acuminate or acute; 3-nerved at the base, adaxial midrib especially near the base with fasciculate and stellate trichomes with 2 to 8 radii, 0.2–0.5 mm long, abaxial midrib especially near the base with conspicuous and soft stellate trichomes with 8 to 15 radii, 0.75 mm long; upper foliar surface punctate under magnification; drying chartaceous, darker above, slightly rough; adaxial

→

Figure 1. *Bernardia fonsecae* A. Cervantes & J. Jiménez Ramírez. —A. Branch with staminate inflorescence (*Fonseca 2538*, type). —B. Branch with pistillate inflorescence (*Fonseca 2539*). —C. Ovary; note the style and annular disc

NOVON 12: 38–41. 2002.



(*Fonseca 2539*). —D. Seed: ventral, dorsal, and lateral views (*Fonseca 2540*). —E–G. Fruit, equatorial and polar views (bottom) (*Fonseca 2540*). —H. Stellate trichomes from the abaxial midrib (*Fonseca 2538*, type). —I. Staminate flowers and a subtending bract (*Lozano 710*). —J. Cicatricoso-crateriform gland on abaxial surface of the leaf (*Fonseca 2539*).

Table 1. Morphological characteristics distinguishing *Bernardia fonsecae* and *B. mollis.*

Characteristics	*B. fonsecae*	*B. mollis*
Leaf shape	broadly elliptic to elliptic, elliptic-obovate or rarely lanceolate	ovate, elliptic-ovate
Leaf base	attenuate or rounded	broadly rounded
Foliar surface	smooth, punctate under magnification	rugose
Abaxial vein vestiture	stellate trichomes with 8 to 15 radii, 0.75 mm long, only near the leaf base	fasciculate and stellate trichomes with 2 to 6 radii, 0.5 mm long, along the entire leaf
Adaxial vestiture	stellate-puberulent	appressed fasciculate
Cicatricoso-crateriform gland diameter	0.5–0.8 mm	0.8–1.0 mm
Staminate inflorescence position	axillary and terminal	axillary
Staminate tepal size	3.5–4.5 × 1.5–4.0 mm	2.0–3.5 × 1.2 mm
Staminate tepal vestiture	glabrescent on inner surface	pilose on inner surface
Staminate flowers per bract	4–7 flowers	3–5 flowers
Stamen number	(22)26–44	22–24
Filament length	2.5 mm	2.0 mm
Anther length	0.3 mm	0.5 mm

surface glabrescent or sparsely puberulent with simple, stellate or multiradiate trichomes, radii 6 to 10, ca. 0.1 mm long, abaxial surface glabrescent or sparsely puberulent with stellate and multiradiate trichomes, radii 8 to 16, ca. 0.1 mm long; 1 to 3 cicatricoso-crateriform glands at margin and on each side of the midrib in abaxial surface, 0.5–0.8 mm diam.; petioles 1.0–4.2(–8.0) cm long, stellate-puberulent and tomentose; stipules deciduous, 2.0–2.5 mm long, narrowly triangular, entire, rigid, appressed, strigulose, pale yellow. Staminate inflorescence racemose, terminal and axillary, at anthesis 1.5–7.5 cm long, the (5)10 to 15 bracts separated or congested on the axis; bract 4- to 7-flowered, broadly deltoid-ovate, cupuliform, 2.5–3.0 × 3.5–4.5 mm, apiculate, coriaceous, pilose on outer surface, glabrescent on inner surface; bracteoles inconspicuous. Staminate flowers pedicellate, pedicel 2.0–3.5 mm long at anthesis; tepals 3 or 4, valvate, elliptic or oblong, 3.5–4.5 × 1.5–4.0 mm, equal, densely pilose on outer surface, glabrescent on inner surface; stamens (22)26 to 44; filaments stout, 2.5 mm long, pinkish; anthers globose, 0.3 mm long, connective inconspicuous; intrastaminal disc lobulate. Pistillate inflorescence spicate, terminal, peduncles 10 mm long, 4 to 8 bracts; bract 1-flowered, ovate, cupuliform, 3.0–3.5 × 3.0–4.0 mm, acute, coriaceous; bracteoles conspicuous. Pistillate flower sessile; tepals 6, imbricate, broadly ovate, unequal in size, densely pilose on outer surface, glabrescent on inner surface; disc annular, flat, margin erose, glabrous; ovary densely stellate-hirsutulous, globose, deeply 3-lobed, 3–4 × 3–5 mm, styles 3, lacerate, stigma reddish or rufous, pilose. Fruits capsular (1)2- or 3-lobed, 24.0 mm diam., densely stellate-hirsutulous, slightly keeled on midrib, pericarp minutely aculeate, dehiscent. Seeds spheroid, 14.0 mm long, 12.0 mm wide, slightly carinate on superior and dorsal face, caruncle absent, testa crustaceous, chestnut-colored, minutely lineolate-verrucose and brown-marbled.

This species is known only from montane rainforests at 2200–2500 m in Guerrero, Mexico, where it is associated with *Fuchsia* sp., *Clethra* sp., *Solanum* sp., *Abies religiosa* Lindley, *Chiranthodendron pentadactylon* Larreat, and *Cornus disciflora* Sessé & Moçiño ex DC.

Bernardia fonsecae is unique within the section in its large leaf size, the vestiture of the abaxial midrib (soft stellate trichomes with 8 or 15 radii, 0.75 mm long), and in having the largest fruit known of *Bernardia*. It belongs to section *Tyria* and is morphologically similar to *B. mollis* Lundell, which occurs in montane rainforests of Chiapas. These species have in common long petioles, similar shape and size of the staminate bract, and a lobulate intrastaminal disc. *Bernardia fonsecae* differs from *B. mollis* in its leaf base and leaf shape, vestiture of the adaxial surface of the leaf, vestiture of the abaxial veins, diameter of the cicatricoso-crateriform glands, position of the staminate inflorescence, and number of stamens, among other characteristics (Table 1).

The name honors Rosa María Fonseca, teacher and botanist from the Facultad de Ciencias, UNAM, who has made important contributions to the knowledge of the flora of Guerrero state.

Paratypes. MEXICO. **Guerrero:** Mpio. Gral. Heliodoro Castillo, aprox. 3 km de Puerto del Gallo en dirección NE, ladera O del cerro Teotepec, 18 Oct. 1999, *E. Domínguez 1250* (FCME, MEXU); Mpio. Leonardo Bravo, Puerto Soleares, 7 km después de Carrizal hacia Atoyac, 5 Nov. 1998, *Fonseca 2539* (FCME, MEXU, MO), *2540* (FCME, MEXU, MO); Mpio. Leonardo Bravo, 7 km delante de Carrizal rumbo a Atoyac y 2 km al E rumbo a Cacho de Oro, 11 Sep. 1999, *Fonseca 2937* (FCME, MEXU); Mpio. Leonardo Bravo, aprox. 500 m del Puente Las Pastillas, camino Filo de Caballos–Chichihualco, 6 Dec. 1999, *Fonseca 2951* (FCME, MEXU); Mpio. Chilpancingo, al O de Omitelmi, cañada de la Laguna de Agua Fría, 19 July 1985, *Lozano 710* (FCME, MEXU, MO).

Acknowledgments. Hilda Flores Olvera, Helga Ochoterena, and Lawrence Kelly all greatly enhanced the quality of this article by providing numerous insightful comments. We thank Ramiro Cruz Durán for the excellent drawing. We also appreciate the editor and anonymous reviewers, whose comments helped improve the manuscript. The field trips to Guerrero were supported by CONABIO.

Literature Cited

Lundell, C. L. 1940. Studies of tropical American plants-I. Contr. Univ. Michigan Herb. 4: 12–14.

———. 1945. New phanerogams from Texas, Mexico and Central America. Wrightia 1: 53–61.

———. 1976. Euphorbiaceae. Studies of American plants XII. Wrightia 5: 243–249.

———. 1985. Euphorbiaceae from Mesoamerica. Phytologia 57: 367–368.

McVaugh, R. 1961. Euphorbiaceae Novae Novo-Galicianae. Brittonia 13: 145–205.

———. 1995. Euphorbiacearum Sertum Novo-Galicianarum Revisarum. Contr. Univ. Michigan Herb. 20: 173–215.

Pax, F. & K. Hoffmann. 1914. Bernardia. *In* Das Pflanzenreich IV. 147.VII (Heft 63): 21–45.

Webster, G. L. 1994. Synopsis of the genera and suprageneric taxa of Euphorbiaceae. Ann. Missouri Bot. Gard. 81: 33–144.